1:Stanford U. S-4, 5 1956 AF 16 SW China
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III. BRISTLES

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237 Before the outbreak of the Sino-Japanese War in 1937, China's total export of bristles ranged from 8 to more than 10 million pounds a year. (See Table 2.) From 1937 to 1941, the volume was reduced to between 6 and 8 million pounds a year due to the curtailment of bristles supplies from North China and partial disruption of normal distribution channels inside China. In the following two years, the bristles trade between Free China and the outside world was drastically reduced by Japan's total blockade of the China coast. Improvements in air transportation and the Chinese Government's efforts in increasing the collection of bristles from producers in Southwest China, particularly in Szechwan, permitted the nation to more nearly meet the continuing demand abroad for the product by exporting 4 million pounds in 1944, as against only 600 thousands pounds the previous year. The dislocations arising from the war-to-peace transition and the unrealistic official foreign exchange rate of the Chinese yuan reduced the export of bristles in 1945 to 1.3 million pounds. From 1946 to 1948, exports of the product regained their prewar rate of about 10 million pounds a year.

Between 1930 and 1950, the United States and the United Kingdom were the chief importers of Chinese bristles. (See Table 2.) From 1931 to 1938, the United States directly imported between 35 and 45 per cent of China's total bristles export, and in the next ten years between 55 and 95 per

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Table 2. China's Bristles Export in Relation to the United States' Bristles Import a/

Year	Total Export from China (in thousands of pounds)	Total Import of U.S.A. (in thousands of pounds)	China's Export to U.S.A.	China's Export to U.S. as Percentage of: China's Total Export	China's Export to U.S. as Percentage of: U.S.A Total Import
1931	8,484	4,245	3,081	36.1%	72%
1932	8,001	3,486	2,847	35.6%	82
1933	9,100	5,186	4,168	45.8	80
1934	9,273	4,143	3,341	36.0	81
1935	10,199	4,854	3,887	38.1	80
1936	11,807	-	4,893	40.4	90
1937	8,917	4,825	3,734	41.9	77
1938	8,011	3,209	2,869	35.7	89
1939	7,347	5,163	4,632	63.0	90
1940	7,840	5,640	5,078	64.8	90
1941	6,039	5,789	5,229	86.6	90
1942	141	1,458	968	686.5	66
1943	599	1,384	533	89.0	39
1944	4,282	2,871	1,689	38.7	58
1945	1,329	2,840	1,251	94.1	44
1946	10,493	6,454	5,785	55.1	90
1947	9,778	7,042	5,689	58.2	81
1948	10,125	7,307	6,842	67.6	94
1949	-	4,828	-	-	-
1950	-	7,357	-	-	-
1951	-	3,854	-	-	-
1952	-	5,368	-	-	-

a/ Based on Statistical Yearbook of the Republic of China, 1948, Nanking, 1948; and on the following publications of the United States Department of Commerce, Washington, D. C.: Foreign Commerce Yearbook, 1948, 1949, 1950; Monthly Summary of Foreign Trade of the United States.

(Table 2 faces p. 945.)

439 cent. These percentages are even higher if ship-
237 ments of Chinese bristles to the United States via Hong Kong are included. Statistics on the United States' importation of bristles show that from 80 to 90 per cent of the American foreign supply was normally derived from China.

After the Communists gained control of the Chinese Mainland in 1949, trade between the United States and China generally declined. However, the trade in bristles seems to have been an exception.

According to private information from a bristles merchant in New York, the commodity is of such strategic importance to the United States and so unavailable elsewhere than China that American government trade restrictions have been overlooked in regard to bristles imports, usually via Hong Kong. This policy would explain the steadiness of bristles imports into this country during 1950-52 (See Table 2.) despite the political changes occuring in China before that time.

1:Stanford U. S-4, 5 1956 AF 16 SW China AF16

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237 It is difficult to estimate with precision the part of the Southwest provinces in Chinese bristles production, and export, although the importance of the region's contribution is generally known. Before 1937, according to one authoritative study, about 15 per cent of the bristles exported from China came from the Southwest provinces.[2] During the war, the collection and export of bristles in these provinces were administered by the Foreign Trade Commission, a Chinese government agency specially organized to foster the export trade of Free China. According to Nationalist Government statistics, the quantity of bristles collected in the Southwest provinces, mainly from Szechwan, during 1941-45, was as follows:[3]

Year	Thousands of Pounds
1940	1,638
1941	2,772
1942	3,520
1943	2,596
1944	2,728

On the basis of an average annual export of 10 million pounds for all China, the above figures

2. Chung-kuo Ching-chi Nien-chien [Economic Yearbook of China], Hong Kong, T'ai-p'ing-yang ching-chi yen-chiu she, 1947, pp. 55-58.

3. Chinese Ministry of Information, China Handbook, 1937-1945, New York, The Macmillan Company, 1947, p. 419.

1:Stanford U. S-4, 5 1956 AF 16 SW China AF16

439 and other relevant statistics indicate that between
237 15 and 20 per cent of the nation's bristles exports normally originated in Southwest China.

IV. TUNG OIL

439 During the last two decades, several impor-
245 tant developments have occurred in the tung oil trade between the United States and China. First, from 1939 to 1953, the United States' domestic production of tung oil increased by more than ten-fold, whereas the quantity imported was reduced by about two-thirds. In 1953, domestic production for the first time surpassed imports of the commodity. (See Table 3.)

A second important development was the decreasing importance of China as a source of supply for tung oil imports into the United States. Before World War II, more than 90 per cent of American tung oil imports usually came from China. During 1943-45, the Chinese supply disappeared almost entirely from the American market because of the wartime disruption of major transportation arteries between China and the outside world. A temporary recovery in the oil trade between the two countries occurred in 1946, but in the years following, the relative importance of the Chinese supply of tung oil to the United States was greatly reduced because of the increased production of tung oil in South American and the curtailment of Chinese trade as a result of civil war in the country.

5: Davies G-5 (1894-1900) 1909 AF16 Southwest China AF16

Opium is produced in Yün-nan far beyond the requirements of the province, and is largely exported into other parts of China[1]. The opium of Yün-nan is considered by the Chinese to be of very fine quality, though not quite up to the standard of Indian opium. 249

Hemp, which at present is not much cultivated, might easily be extensively grown and exported for rope making. Many kinds of *fruit*, which will not grow in the tropical climate of Burma, thrive in Yün-nan, and even now form a fairly important export. These are apples, pears, quinces, peaches, apricots, cherries, persimmons (dried like figs), chestnuts, and walnuts. Yün-nan *tea* is famous all over China. There is not likely to be much trade in this commodity to Burma, but a railway through to Ssŭ-ch'uan should carry considerable quantities. *Livestock* already forms one of the principal exports from Yün-nan into Burma. Mules, ponies, cattle, and buffaloes are all far cheaper in China than in Burma, so that they can be sold at a profit in the latter country. Sheep are cheap in China, and do not thrive in the warm climate of Burma. At present slaughter-sheep are imported into Burma from India. 245 439 231 439

There are in Yün-nan large grazing grounds which are lying idle because there is not sufficient demand for live-stock. If the farmers had a ready means of disposing of their surplus animals, the flocks and herds of the province would doubtless largely increase. Moreover the trade which now exists in *horns* and *hides* would grow at the same time, and *wool* might become a most important article of export. 237 439

Among minor exports in which a considerable trade might spring up may be mentioned *pigs' bristles*, *ducks' feathers*, and the *white of eggs* for albumen; also from the Tibetan part of Yün-nan *furs* and *musk*.

As to minerals, *gold* has always been an article of export, chiefly in the form of gold-leaf to gild the Burmese pagodas. Whether *other metals* could be profitably brought into Burma or India is a question that cannot be decided till the mines have been more thoroughly examined, but 316 439

[1] This was written before the recent restrictions on opium-growing. See footnote on p. 311.

?: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

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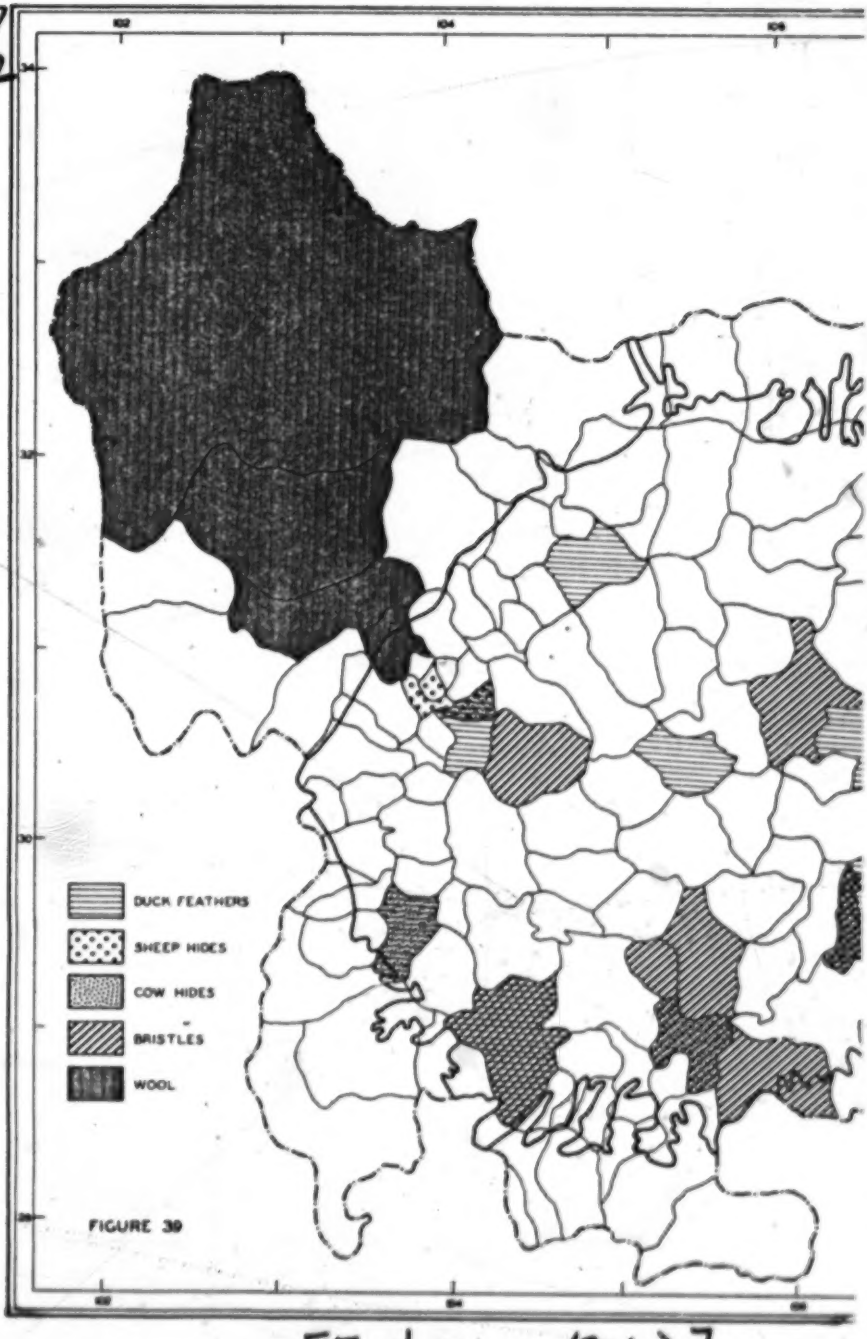

FIGURE 39

[End map 12(a)]

?; Hu K-5 (1914-) 1946 AF16 Southwest China AF16

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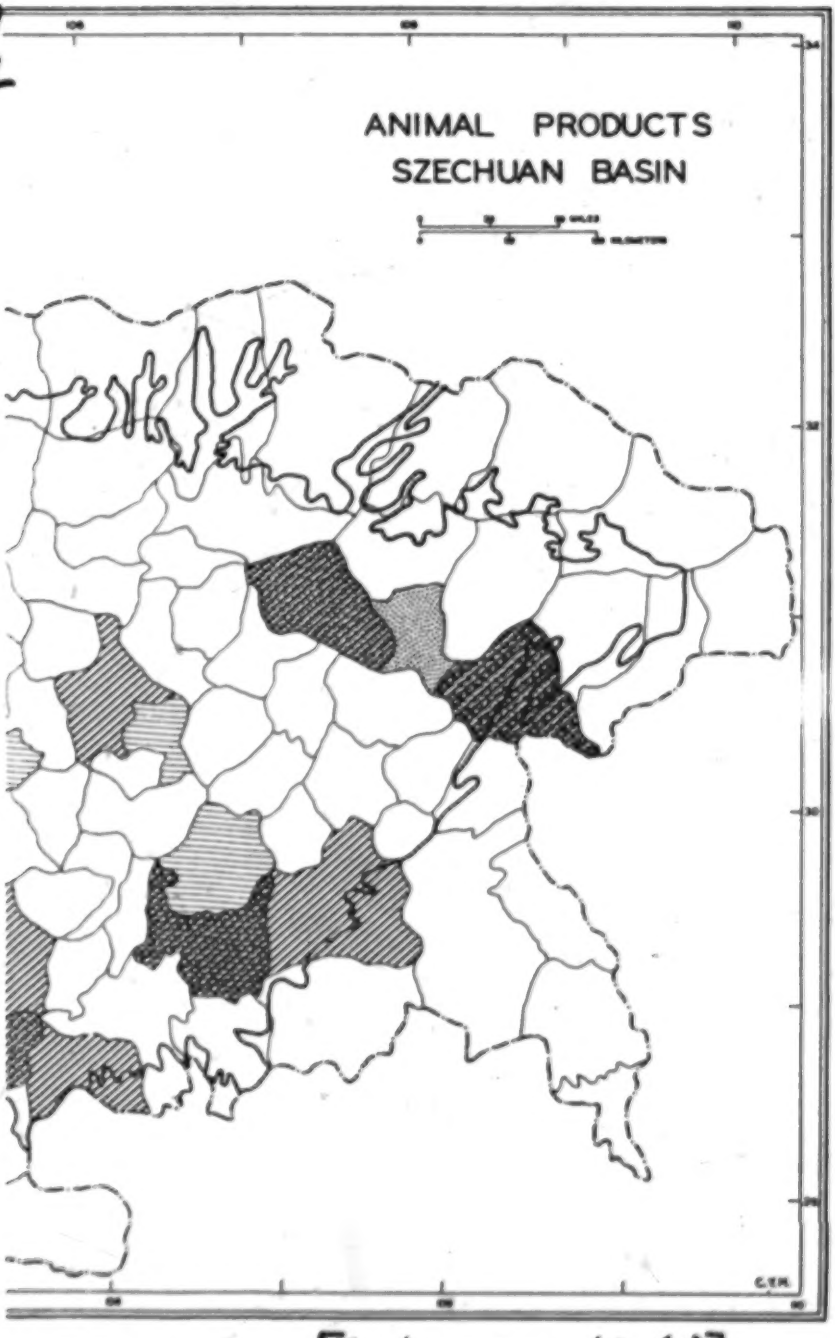

[End map 12 (4)]

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

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251 The process of preparing Cho Tsai is interesting. It is dried (by solar radiation), specially treated with salt and other ingredients (somewhat fermented), seasoned with pepper, and packed in air-tight tanks for export. Like Sunkist oranges from California in the United States, this unique product, "Szechuan Cho Tsai," has been for years the best advertisement for the name of "Szechuan" in many parts of the Far East.

4. Livestock Production and Special Animal Products

231 This term, livestock production or animal husbandry, has a special meaning as used in oriental agriculture. Livestock production here in the Basin, like in many other parts of China, is concerned only with the quick-growing food stock, the species that are easily cared for and do not require special feed. These normally include pigs, chickens, ducks, and some geese. While some cattle and sheep are raised here, they are seldom used for dairy products as in the West.

According to the recent report of the Bureau of Central Agricultural Research, for every one hundred farming families in Szechuan Basin there are 40 water buffalos, 17 head of cattle, 2 horses, 39 goats, 2 sheep, 169 pigs, 366 chickens, 149 ducks, and 20 geese.[1]

• 237 a) Bristles.--In the western commercial world, bristles, like silk and tea, during the past years has always been associated with China. The principal producer of this well known Chinese product is Szechuan Basin. Normally the Basin supplies about one-fourth of the total export of all Chinese bristles, including 15,000 piculs of black and 4,000 piculs of white bristles. Among all the outstanding exports from the Basin, bristles is the only one that has always maintained a predominant position. It now alone comprises about one-fourth of the total value of the export trade of the Basin.[2]

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[1] Report of the Bureau of Central Agricultural Research (1939), p. 42.

[2] The export of bristles has jumped from eighth to fourth place in China's foreign trade since 1939, next only to raw silk, egg products, and tungsten. Szechuan Basin has been the largest producer, contributing about 40 per cent of the total export of this product (cf. J. H. Huang, "An Analysis of Foreign Trade of Bristles of Szechuan," Journal of Foreign Trade, March, 1941).

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Pig-raising is a common side-line of all farms in the Basin. Bristles are produced in nearly every district of the Basin. But the most important producing centers are I-ping, Pa-hsien, Nan-chung, Chien-yang, Yung-chang, and Lung-chang (Fig. 39). Most of these districts produce black bristles. Yung-chang and Lung-chang alone are noted for their excellent white bristles. They are particularly well known for their brilliance, length, and strength and have long held at a premium in the international market. The black bristles produced at Ho-chuan, Nan-chung, Ta-hsien, and Pa-hsien (Fig. 39) along the Chialing River Valley are the best on account of their special brilliance.

The bristle-collecting season in the Basin extends generally from November to April, i.e., throughout the cold season. Generally no business is done during the rest of the year. This is mainly because the bristles grown during the hot weather are said to be soft and useless for manufacturing purposes. The Szechuan bristles, on account of their great strength, elasticity, brilliance, and relative immunity to moisture, are of a particularly high quality, and have long enjoyed a favorable reputation throughout the world. The best foreign buyers are the United States, which normally takes 30 per cent of the total exports; France and Japan, each taking about 20 per cent; and Germany and Great Britain, each taking about 15 per cent of the total exports. The principal use of the Basin's bristles in the United States are for tooth-and other high-grade brushes. But with the recent introduction of manufacturing bristles for such purposes in the United States, the prospect of this commodity, in so far as export is concerned, remains somewhat uncertain.

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b) Sheep and cow hides.--While most of the provinces in China produce either water buffalos (as in South China) or oxen (yellow cattle) (as in north China), Szechuan Basin produces both. Among all the interior provinces in China, Szechuan Basin is the most important in the production of cow hides. The areas around Chengtu, Lo-shan, Lu-hsien, Pa-hsien, and Nan-hsien (Fig. 39) are particularly important. The cow hides produced in Chengtu Plain, owing to the good pasture nearby, are especially abundant in quantity and superior in quality. It is estimated that the annual output of cow hides, including both the water buffalo and the yellow cow, is approximately 80,000 piculs. Formerly, on account of the lack of tanning establishments in the

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

237 Basin, 70 to 80 per cent of the total production was exported as raw materials. But during recent years, since the rapid growth of local tanning industries, the hides are mainly used for manufacturing shoes, boxes, and other leather products consumed in the Basin.

Besides, the buffalo horns are also commonly utilized in Chengtu and other districts for the manufacture of a great variety of articles for everyday household use.

c) Sheep hides and wool.--There are two kinds of sheep hides produced in the Basin, namely, the garment-making hide, produced in the Sung-Pan area at the northwest edge of the Basin, and the leather-making hides, produced in the Chengtu and Wan-hsien areas (Fig. 39). Normally, the total annual output of sheep hides is around 30,000 piculs. In 1935 the Basin exported 1,800,000 sheep hides, at a value of $1,800,000.[1] Normally, the United States takes about 40 per cent of the total export, with Great Britain, Japan, Germany, and France following in order.

A large quantity of wool, totaling nearly 40,000 piculs annually, is produced in the Basin. Sung-pan, Li-fan, Wen-chuan, and other districts at the west and northwest edge of the Basin are the principal producing centers (Fig. 39). Nearly 85 per cent of the total production of wool is shipped down the Yangtse in raw material form. It is either exported directly to Great Britain or sold to local mills in Shanghai for manufacturing purposes.

231 d) Silk.--Szechuan Basin has long been well known in all China for its production of yellow silk. The Basin is second only to the two most important silk-producing provinces of China--Chekiang and Kwangtung. Normally, the Basin produces about 20 per cent of the total silk production of all China, and has an annual output of 30,000 piculs.[2] In the past, silk has always been the leading export of the Basin. In 1930, a peak year, the total export amounted to 20 million dollars, which constituted 15 per cent of the total export silk trade of all China in that year.[3] But recently, on account of inefficient methods of

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[1] Bureau of Central Agricultural Research, Szechuan Provincial Government, Agricultural Statistics (1935).

[2] T. S. Fan, "The Past and Future of the Silk-worm Industry of Szechuan," Reconstruction Weekly, IV, No. 6 (1935), 34-42.

[3] China's Inspector-General of Customs, Analysis of Foreign Trade of China (1930).

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

The principal overseas market for Szechuan silk at present (shortly before the war) is in the United States, France, and Burma. For exports to the first two markets, silk is normally shipped down the Yangtse to Shanghai for overseas transhipment, whereas silk for the Burma market ordinarily goes by way of the Lo-shan-I-ping via Kunming, Yunnan route. The difficulty of transportation by way of the latter route is stupendous. Ordinarily it takes at least three to four months by human carriers, for one trip from Lo-shan to Rangoon, Burma, and the transportation costs sometimes run as high as two-fifths of the value of the goods themselves. Unless transportation facilities along this route are improved, no matter how strongly the Burmese favor Szechuan silk, as has been the case thus far, the silk trade between Szechuan and Burma will always remain greatly limited. 231 438

Besides the difficulty of transportation, silk production in the Basin is now confronted by new handicaps. Silkworm rearing, formerly a profitable supplementary rural industry, has now given way to the production of grains (many mulberry fields have been converted into grain fields) which have been commanding high prices during recent years as a result of the increasing demand for foodstuffs due to the war.

e) Duck feathers and other products.---One cannot very well close this section on livestock production of the Szechuan Basin without mentioning another interesting product--duck feathers. The Basin normally has a total of over fifteen million ducks.[1] They are especially concentrated in the districts around Chengtu Plain, Lo-shan, I-ping, Yo-chi, and Pa-hsien (Fig. 39). Besides the wide use of the meat for food by the natives, the feathers are especially valued by the wealthy people for use in making light, warm and soft comforters, filling pillow cases and quilts, spinning yarn, weaving cloth, and a number of other uses. 237. [235]

The total production of duck feathers is estimated to be approximately 10,000 piculs annually. Approximately 70 per cent of the total product is shipped to markets overseas. Before the war, France was the leading customer, taking 30 per cent of the total export, with the United States and Great Britain each taking 20 per cent, and Germany and Japan each taking about 10 per cent. 237 439

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[1] Report of the Bureau of Central Agricultural Research (1939), p. 63.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

136 neighborhood of Lo-shan and other districts to the north, the insects cannot survive the winter. Each year the wax tree growers have to dispatch special messengers on foot to secure eggs or breeds of insects from the hilly regions, particularly the Chien Chang area in the Ning-yuan district of southern Sikang province, which is about 250 miles distant from the principal wax-producing centers at Lo-shan.

Owing to the long distance involved, and the slow and difficult transportation conditions, as well as the great variation in climatic conditions between the warm insect-producing southern areas and the cool wax-tree-growing districts to the north, there is involved great risk in transporting these insect breeds. The carriers travel night and day, and generally the trip is covered in sixteen to twenty days, for this is the period during which the eggs are expected to hatch. Once the little larvae start crawling around, the carriers have no alternative but to throw them away. This alternative, of course, means great financial losses to the wax-tree growers, and has become one of the most serious problems of the wax-tree industry in the Basin.

•237 The principal wax-producing areas are concentrated in the southwest of the Basin, particularly in the districts of O-mei, Hung-ya, Chia-chiang, Lo-shan, Chien-wei, and Kuan-hsien (Fig. 36). The total production of white wax in the Basin varies with the climatic conditions. Wind and rain are very much dreaded, particularly at the season when the insects are in suspension. These insects, exposed as they are on the tender branches of wax trees of one or two years' growth, are too weak to resist strong wind or heavy rain.

Normally, the total annual production is around 20,000 piculs. But during recent years, the total production has amounted to only 5,000 piculs, about a fourth of the usual production. This present sharp decrease in white-wax production is, however, due not so much to climatic adversity as to political instability and heavy taxation in the Basin. The greatest enemy of white-wax production in Szechuan Basin is the stupendously difficult conditions of transportation. The newly completed Szechuan-Yunnan western highway will undoubtedly relieve the transportation difficulty, and will accelerate the development of the industry in the Basin.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

The most commonly cultivated white-wax tree, the Pai Lou Shu (Fraxinus Chinensis) is a fast-growing tree of medium size. In outer appearance it is very much like a willow tree but generally not as tall (Fig. 41). It prefers a mild and humid climate. It grows readily from cuttings of the one- or two-year-old branches of the mother tree. After three or four years the tree is suitable in size for wax production. It furnishes a rich sap, which by itself is of no value and is used to nourish the insect. The metamorphosis of the wax insect is similar to that of the silkworm. From egg it becomes larva, pupa, and eventually adult. It takes one year to complete its life cycle. It is the male larva which produces the wax, while the female merely lays eggs to carry on the line. The present strain in Ning-yuan district is said to be five hundred years old.

During the early spring the eggs of the insects wrapped in leaves of the Tung or some other tree, with holes pierced for air, are suspended on the branches of the wax tree to hatch. Generally, the insect prefers the tender young branches of two- or three-year-old trees, of which the sap is rich and the epidermis of the branches is soft enough for the young insects to break through. Within forty to fifty days after the eggs are hatched the wax appears upon the tree and gradually increases until the early autumn (September), when the harvest begins. The snow-white wax accumulated on the main branches is scraped down with sharp knives, while the wax on small twigs is cut down with the twigs. The wax is then steamed and refined two or three times, until the pure white wax is precipitated.

The white wax has a wide scope of uses, including candles, glazing for paper, silk, furniture polish, coating for pills, models, polish for valuable metal utensils to prevent oxidation, and many medicinal purposes. The residue from white-wax refining is often used for fertilizers. Formerly, about 80 per cent of the total product was exported to Japan and the United States. But it now finds its markets in the interior provinces, particularly in Kansu and Shensi. It is reported that Chinese wax is superior[1] to any other wax produced in the world because it has no smell and leaves no stain whatsoever. Of particular importance

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[1] J. S. Ho, "The Wax Tree Culture and Its Problems in Szechuan," Chinese Reconstruction Weekly, XI, No. 6 (1940), 11-12.

7: Hu K-5 (1934-) 1946 AF16 Southwest China AF16

237 is its high melting point--83 degrees centigrade. It is said that Thomas Edison used this white wax from Szechuan Basin to make his first gramophone records, which have since given pleasure to so many people in all parts of the world.[1]

2. Yellow Wax Production

In addition to white wax, the Szechuan Basin also produces a considerable amount of yellow wax from bee hives. According to Buck, Szechuan farmers lead all China in the average number of bee hives per farm.[2] They are particularly important in the districts of Kuang-yuan and Kuan-hsien, in the north and west of the Basin (Fig. 36). The total production is generally estimated to be around 34,000 piculs, with Kuang-yuan, as the leading producer, accounting for a fourth of the total production. The yellow wax, like the white, is used mainly for candles, furniture polish, models, and many medicinal purposes. But, unlike the white wax, it is consumed principally within the Basin.

D. The Varnish Tree Production

314 Lacquer and lacquer wares in Szechuan have been famous ever since the early Han dynasty. The main producing areas are in the districts of Kuang-yuan, Chao-hua, and Tung-chiang, to the north, and Nan-chuan to the south (Fig. 36). The northern areas are the most important. The total annual production is approximately 4,000 piculs.

The varnish is obtained by tapping the stems of the tree (Rhus vernicefera), locally known as Tsi Shu, by making horizontal incisions in the bark. Generally, these incisions are first made and the tapping begun when the tree is seven years old and has attained a diameter of six inches. Two years are allowed to elapse before the same tree is tapped again. The tapping season commonly begins in late June or early July, at the time corresponding with the opening of the flower, and continues throughout the summer. The sap, as it is exuded, is pure white in color, but quickly oxidizes to a grayish-white, and finally to black. To prevent this oxidation, the crude varnish is covered as soon as possible with layers of oil paper.

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[1] Ibid., p. 17. [2] Buck, op. cit., p. 248.